A product to extend the life of energy transmission and distribution transformers by total management of insulation systems

Sprawozdania

Informacje na temat projektu

TRANSMAN

Identyfikator umowy o grant: 513137

Projekt został zamknięty

Data rozpoczęcia
1 Listopada 2005

Data zakończenia
31 Lipca 2008

Finansowanie w ramach
Horizontal research activities involving SMEs: Specific activities covering wider field of research under the Focusing and Integrating Community Research programme 2002-2006.

Koszt całkowity
€ 1 578 878,00

Wkład UE
€ 817 798,00

Koordynowany przez
KELMAN LIMITED
United Kingdom

Ten projekt został przedstawiony w...

Final Report Summary - TRANSMAN (A Product to Extend the Life of Energy transmission and Distribution Transformers by Total Management of Insulation Systems)

The objective of the TRANSMAN project was to produce viable prototype device that integrates key technology elements of power transformer oil insulation monitoring and treatment into an automated process system.

The TRANSMAN project succeeded in the development of dehydrating and particle removal technologies that operate on line with minimal or manual intervention. The technology had the ability to remove moisture down to levels of approximately 10-20 ppm of water in the transformer oil, and could remove particles from the oil < 2µm dependent upon the filtration elements used within the system. The TRANSMAN system was also capable of monitoring the particle removal process by incorporating an optical particle count / size system.

The key scientific and economic achievements of the TRANSMAN project were:
- The real-time measurement of particles of micron-scale dimensions within transformer insulating oils.
- The development of a moisture removal and conditioning system for on-line processing of transformer insulating oils.
- The development of an on-line filtration system for the removal of micron-scale particles from transformer insulating oils.
- The creation of intelligent transformer management software for the effective monitoring of transformer condition.

The scientific research work was required in order to:
- Develop of drying technology efficient enough to meet the requirements for removing oxygen and moisture in a compact system which does not require ground works to install.
- Improve understanding of dehydration technologies related to the increased ability of oil to give up the water dissolved within it.
- Develop optical diagnostic and monitoring technologies to determine the condition of the insulating oil.

- Adapt of membrane technologies for incorporation within oil conditioning systems.

A number of developments became possible as a direct result of the TRANSMAN project:
1) Real-time particle sensor. The development of a system to provide quantitative analysis of the size distribution and population of particulate matter within transformer oil was undertaken in order to provide diagnostic information regarding the state of the oil with respect to this particulate matter. A system was developed incorporating a waveguiding approach to illuminating the oil sample, minimising background illumination and maximising contrast resultant from light scattered by particles.
2) On-line particle filtration system. The particle filtration system comprised porous membranes the rotation of which caused turbulent cross flow on the membrane surface avoiding particle deposition and blocking of the pores much longer than in normal cross flow filtration units.
3) On-line moisture removal system. The on-line moisture removal system was compact and consisted of recyclable packing material that could be regenerated by the application of heat, rather than the industry standard Fullers earth, that must be disposed of as chemical waste.
4) Transformer management software. Transformer management software was developed to enable data to be introduced describing parameters related to transformer condition.

The TRANSMAN project was a very demanding project. The Consortium did achieve the goal of creating a system which, by processing the transformer oil and monitoring the process, would enhance the long term life of the transformer asset. But in order to progress to a satisfactory manufacturable and copasetic product, a considerable amount of further development and refinement needed to be undertaken.

The TRANSMAN project delivered a compact, low-cost transformer insulation monitoring, conditioning and management system that had significant market potential. The SMEs collaborated on a trans-European level with great success and were committed to exploiting the TRANSMAN technologies.

Powiązane dokumenty

Final Report - TRANSMAN (A Product to Extend the Life of Energy transmission and Distribution Transformers by Total Management of Insulation Systems)

Ostatnia aktualizacja: 14 Kwietnia 2011

Permalink: https://cordis.europa.eu/project/id/513137/reporting/pl